

THAT WHICH IS CLAIMED IS:

1. A method of connecting an integrated circuit to a substrate, the method comprising the steps of:  
attaching the integrated circuit to a plurality of conductive microbeams releasably supported by a carrier;  
lifting the integrated circuit from the carrier so as to separate the microbeams from the carrier;  
mounting the integrated circuit to a substrate;  
and  
connecting the plurality of microbeams to respective ones of a plurality of substrate contacts.
2. A method of connecting an integrated circuit to a substrate according to Claim 1 wherein the attaching step comprises diffusion bonding the integrated circuit to the conductive microbeams.
3. A method of connecting an integrated circuit to a substrate according to Claim 2 further comprising a step of providing an integrated circuit comprising bumps for electrical connection with the conductive microbeams.
4. A method of connecting an integrated circuit to a substrate according to Claim 1 wherein the attaching step comprises reflowing solder to attach the integrated circuit to the conductive microbeams.
5. A method of connecting an integrated circuit to a substrate according to Claim 4 further comprising providing an integrated circuit comprising bumps for electrical connection with the conductive microbeams.
6. A method of connecting an integrated circuit to a substrate according to Claim 1 wherein the attaching step comprises tape automated bonding the integrated circuit to

the conductive microbeams and wherein the carrier is a TAB carrier adapted for automated conductive microbeam attachment.

7. A method of connecting an integrated circuit to a substrate according to Claim 1 further comprising providing a carrier that is substantially rigid.

8. A method of connecting an integrated circuit to a substrate according to Claim 1 further comprising providing a carrier comprising fan-out conductors for electrical testing of the integrated circuit.

9. A method of connecting an integrated circuit to a substrate according to Claim 1 further comprising providing a carrier comprising a release layer for releasably supporting the conductive microbeams.

10. A method of connecting an integrated circuit to a substrate according to Claim 9 wherein said providing step comprises providing a carrier having a release layer comprised of tungsten.

11. A method of connecting an integrated circuit to a substrate according to Claim 1 further comprising providing at least one microbeam comprising a bump.

12. A method of connecting an integrated circuit to a substrate according to Claim 11 wherein said providing step comprises providing a microbeam having a bump comprised of solder.

13. A method of connecting an integrated circuit to a substrate according to Claim 12 wherein said providing step comprises providing a microbeam having a solder dam.

14. A method of connecting an integrated circuit to a substrate according to Claim 1 further comprising providing a substrate comprising a multichip module.

15. A method of connecting an integrated circuit to a substrate according to Claim 1 wherein the connecting step comprises compression bonding the microbeams to respective substrate contacts.

16. A method of connecting an integrated circuit to a substrate according to Claim 1 wherein the connecting step comprises reflowing solder to connect the microbeams to respective substrate contacts.

17. A method of connecting an integrated circuit to a substrate according to Claim 1 further comprising the steps of:

fabricating a plurality of carriers from a single carrier sheet;

forming a plurality of conductive microbeams on each of a plurality of carriers; and

dividing the carrier sheet to thereby form individual carriers prior to said attaching step.

18. A method of forming leads for an integrated circuit having a plurality of bond pads, the method comprising the steps of:

releasably forming a plurality of conductive microbeams on a carrier;

bonding the plurality of bond pads to respective ones of the plurality of microbeams; and

lifting the integrated circuit from the carrier so as to separate the microbeams from the carrier, wherein the microbeams remain bonded to respective ones of the bond pads.

19. A method of forming leads for an integrated circuit having a plurality of bond pads according to Claim 18 wherein the bonding step comprises diffusion bonding the bond pads to respective microbeams.

20. A method of forming leads for an integrated circuit having a plurality of bond pads according to Claim 18 wherein the bonding step comprises reflowing solder to bond the bond pads to respective microbeams.

21. A method of forming leads for an integrated circuit having a plurality of bond pads according to Claim 18 wherein the attaching step comprises tape automated bonding the bond pads to respective microbeams and wherein the carrier is a TAB carrier adapted for automated conductive microbeam attachment.

22. A method of forming leads for an integrated circuit having a plurality of bond pads according to Claim 18 further comprising providing a carrier that is substantially rigid.

23. A method of forming leads for an integrated circuit having a plurality of bond pads according to Claim 18 further comprising the steps of:

fabricating a plurality of carriers from a single carrier sheet; and

dividing the carrier sheet to thereby form individual carriers.

24. A method of forming leads for an integrated circuit having a plurality of bond pads according to Claim 18 further comprising providing a carrier comprising a release layer for releasably supporting the conductive microbeams.

25. A microbeam assembly adapted to form interconnects between integrated circuit bond pads and substrate contacts, the microbeam assembly comprising:

a carrier; and

a plurality of conductive microbeams releasably bonded to the carrier, wherein the conductive microbeams are sized and spaced to mate with the bond pads of an integrated circuit.

26. A microbeam assembly according to Claim 25 wherein the carrier is a TAB carrier adapted for automated conductive microbeam attachment.

27. A microbeam assembly according to Claim 25 wherein the carrier is substantially rigid.

28. A microbeam assembly according to Claim 25 wherein the carrier comprises fan-out conductors for electrical testing of an integrated circuit.

29. A microbeam assembly according to Claim 25 wherein the carrier comprises a release layer for releasably supporting the conductive microbeams.

30. A microbeam assembly according to Claim 29 wherein the release layer comprises tungsten.

31. A microbeam assembly according to Claim 25 wherein at least one microbeam comprises a bump.

32. A microbeam assembly according to Claim 31 wherein the bump is comprised of solder.

33. A microbeam assembly according to Claim 32 wherein the at least one microbeam further comprises a solder dam.

34. A microbeam assembly according to Claim 31 wherein the bump is comprised of gold.

35. A microbeam assembly according to Claim 31 wherein the bump is comprised of aluminum.